

ABSTRACT

A robust, reliable and low-cost metal structure and process enabling electrical wire/ribbon connections to the interconnecting copper metallization of integrated circuits. The structure comprises a layer of barrier metal that resists copper diffusion, deposited on the non-oxidized copper surface in a thickness such that the barrier layer reduces the diffusion of copper at 250 °C by more than 80 % compared with the absence of the barrier metal. The structure further comprises an outermost bondable layer which reduces the diffusion of the barrier metal at 250 °C by more than 80 % compared with the absence of the bondable metal. Finally, a metal wire is bonded to the outermost layer for metallurgical connection.

The barrier metal is selected from a group consisting of nickel, cobalt, chromium, molybdenum, titanium, tungsten, and alloys thereof. The outermost bondable metal layer is selected from a group consisting of gold, platinum, and silver.